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**EDUCATION**

# Open-air schools helped fight pandemics in the 1900s. Should they make a comeback?

**Svetlana Shkolnikova** [NorthJersey.com](https://www.northjersey.com)

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NEWARK, N.J. – The Boylan Street School fulfilled its public health mission long ago, but its role in the fight against tuberculosis remains wrought in its rusty iron entrance gates: “Open Air School.”

The school was specifically designed for children susceptible to tuberculosis, opening in Newark in 1930. Today, it stands as a red-brick remnant of an experimental era that sought to curb the airborne spread of a pandemic by exposing education to the outdoors.

In the coronavirus era, it may offer lessons anew.

The two-story, art deco school was designed to maximize access to the natural environment, its soaring windows and south-facing skylights drinking in fresh air and sunlight. On the second floor, a covered porch offered room for 100 cots where students took daily outdoor naps. On cloudy days, children were treated with quartz lamps in a basement “heliotherapy room,” according to a history written by state preservationists.

“They were in the same crisis mode as we are now, and they were trying to understand and figure it out and do right by kids,” said Ann Marie Ryan, chair of the interdisciplinary learning and teaching department at the University of Texas at San Antonio.

Open-air therapy was considered the best treatment for tuberculosis before the advent of antibiotics. As the disease festered in crowded, poorly ventilated indoor spaces in the early 20th century, Germans established a school in a forest and taught sickly children in open sheds between pine trees. Educators across Europe and North America soon took notice.

The first open-air school in the United States was fashioned out of an unused schoolhouse in Providence, Rhode Island, in 1908. One of the walls in a second-floor classroom was torn down and replaced with floor-to-ceiling windows that could be raised with pulleys. Students braved a harsh winter that year, snuggling in woolen wearable blankets and using heated soapstone as foot warmers.

It may have been cold, but by the end of the school's first year, none of the children had gotten sick, and each gained an average of 5 pounds, according to the book "Open Air Schools," published in 1918 amid the Spanish Flu pandemic.

Education moved onto rooftops, into open-windowed classrooms or fully outdoors on vacant lots and beaches in 168 American cities, according to a report published in 1916 by the U.S. Department of the Interior. Boston erected a tent classroom with canvas curtains on the roof of a park refectory, and New York City opened its first open-air school on an abandoned ferryboat, according to "Open Air Schools."

As the open-air movement became more organized, districts began replacing makeshift classrooms with permanent buildings like the Boylan Street School.

"There was a feeling that getting sun and fresh air was a very important thing, especially for children who lived in a city, and that we needed to not just help academically, but also help stimulate students physically," said Ray Lindgren, vice chair of the Newark Public Schools Historical Preservation Committee.

## **Helio glass**

The school's sanitarium-style design included bands of large glass-less windows, a retractable roof and a covered porch for daily outdoor rests.

"All standard windows opened widely and contained 'helio glass,' which was thought to allow in beneficial types of light rays normally filtered out by regular glass," according to a history compiled by the Historic Preservation Office.

Desks and chairs were lightweight and portable to allow as much outdoor learning as possible on Boylan's lawns. The school combined academics with exercise, regular medical checkups, a closely monitored diet with three meals a day and a focus on hygiene. Nurses

and teachers also visited students' families at home to emphasize the importance of nutrition, cleanliness and fresh air.

“It was this kind of very over-the-top public health model of teaching and learning,” Ryan said. “It was part of the Progressive Era, where there was this monitoring of family life and children and trying to figure out what the source of the problem was. It was also invasive and very judgmental about students and poverty.”

Tuberculosis at the time was largely associated with dirty living conditions, and many students at Boylan came from the city's tenements.

The need for open-air schools diminished significantly after two New Jersey microbiologists discovered the antibiotic streptomycin in 1943. Boylan transitioned to helping students with special needs and then into a regular elementary school, Lindgren said. It became an early-childhood center in 1997 before closing in 2014.

Open-air schools receded into history until the novel coronavirus reignited fears over how readily a pathogen can spread in closed spaces. Research has shown that the risk of contracting the virus is much lower outdoors than indoors. Interest in outdoor classrooms has “exploded” in recent weeks as schools nationwide scramble to devise reopening plans, Ryan said.

Three public elementary school teachers in Brooklyn called for outdoor learning in a New York Daily News opinion piece last month, writing that a return to traditional classrooms could spark another mass outbreak.

The New Jersey Education Association, the statewide teachers' union, is not opposed to classes meeting outdoors but questions the practicality of open-air learning, spokesman Steve Baker said.

"There are simply too many days when weather, noise or other factors make it impossible or impractical for students to learn outdoors," he said. "I'm not sure how a district protects student safety if the safety plan is to be outside and students aren't able to be outside on any given day."

**USPS:** Postmaster General DeJoy says he will stop Postal Service changes until after November election

## An open-air comeback?

At least one New Jersey district, the Chathams, is making fresh air a cornerstone of in-person instruction. The district is encouraging teachers to take classes outside, and principals are working on placing furniture outdoors, according to a letter Superintendent Michael LaSusa wrote to parents last month. Windows will be open in every classroom.

State guidelines advise schools reopening this fall to allow outdoor classrooms and open windows for greater circulation when weather permits. That can be difficult in classrooms where districts have installed stoppers to prevent windows from opening more than 4 to 6 inches. The stoppers prevent students from falling out but also drastically reduce the amount of outdoor air in a classroom, according to the NJEA.

**History:** This hospital was at the center of NJ's last great epidemic. Now it's slated for housing

Schools like Boylan inspired a brief period of 8-foot-tall windows and high ceilings in school architecture, Lindgren said. By the 1950s and 1960s, as heating, ventilation and air-conditioning technology advanced, ceilings dropped and windows shrank to reduce sun glare, seal off pollution and cut heating and cooling costs.

The result was nearly windowless buildings. Two schools near Boylan were built in 1984 when educators believed windows posed a safety risk and distracted students. The schools have a total of about five windows between them, Lindgren said.

## Hermetically sealed

“Fresh air goes out of vogue around the time you get this rise in using engineering to organize spaces and manage environmental conditions,” said Daniel Freund, a social studies professor at Bard High School Early College in Manhattan and author of “American Sunshine: Diseases of Darkness and the Quest for Natural Light.”

“Buildings become completely hermetically sealed.”

The ventilation systems that now pump air into school buildings are considered a key component for safely reopening schools this fall. But an estimated 41% of districts in the

country need to update or replace HVAC systems in at least half their schools, according to a June report by the U.S. Government Accountability Office.

As in so many other areas, the coronavirus pandemic has pushed shortcomings in building design and ventilation to the forefront, Freund said. It has also highlighted the close relationship between health and environment.

“Maybe it’s time to reconsider and rethink how the indoors look, what fresh air means, how air can circulate through spaces and what brings health and what brings illness,” Freund said. “The fresh-air school is a moment that was done with incredible enthusiasm, with real innovation, with real concern, and I hope that we ask those questions now.”

The Newark school district, the largest in the state, will reopen Sept. 8 with in-person learning for those who are comfortable with it. HVAC systems are being upgraded and windows are being checked for functionality, Lindgren said. It is possible some classes will include limited outdoor time, but the logistics of taking classes outside are more complicated than a century ago, when schools were more rural and had fewer safety concerns.

“There’s a clear understanding of the importance of getting out and getting air,” Lindgren said. “The challenge now becomes: How do we do that?”

*Follow reporter Svetlana Shkolnikova on Twitter: @svetashko*